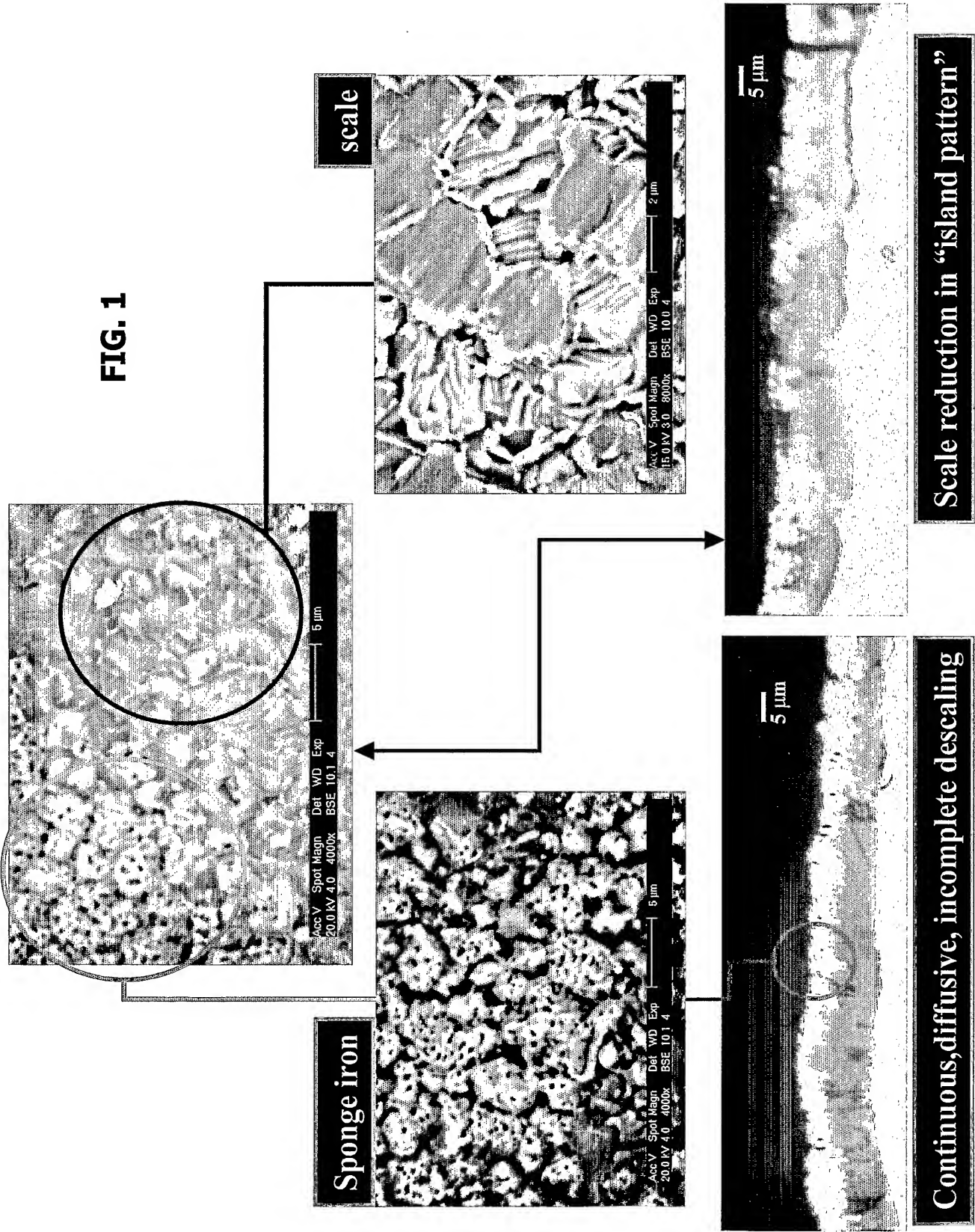


FIG. 1



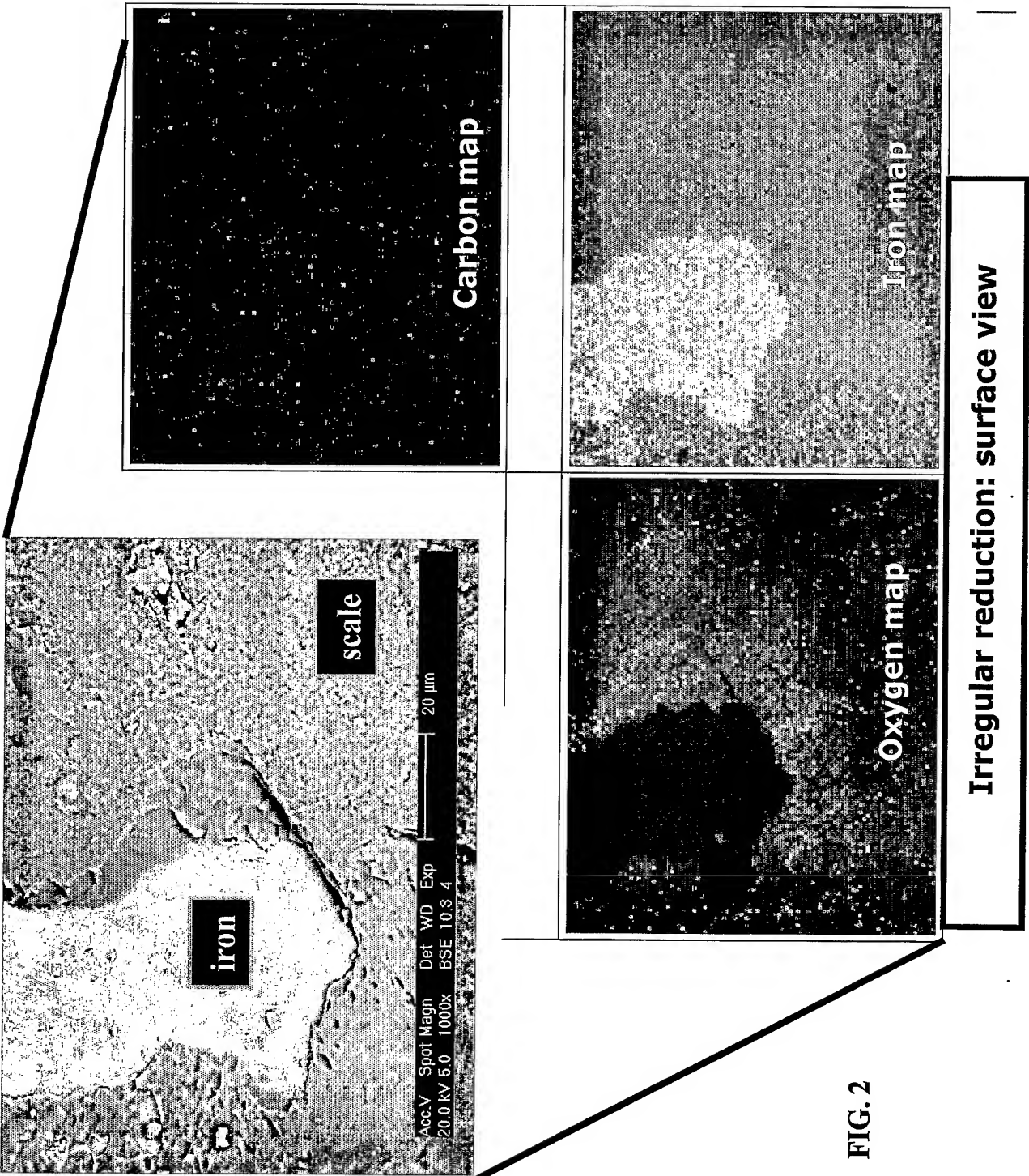
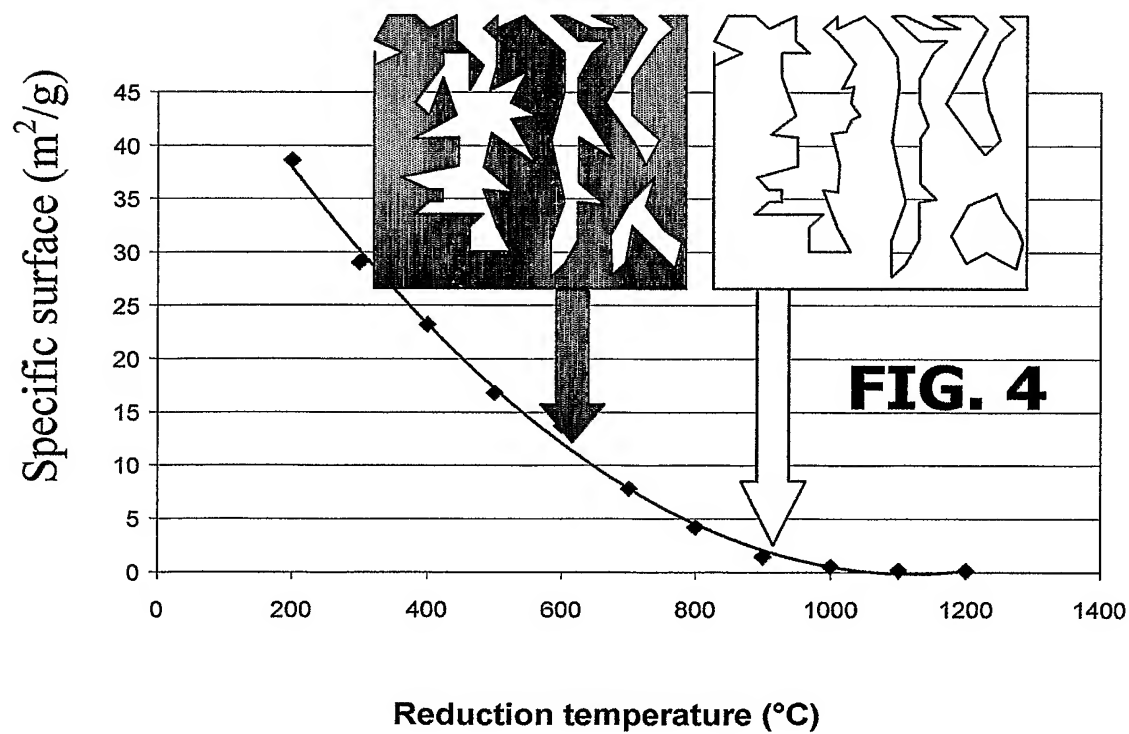
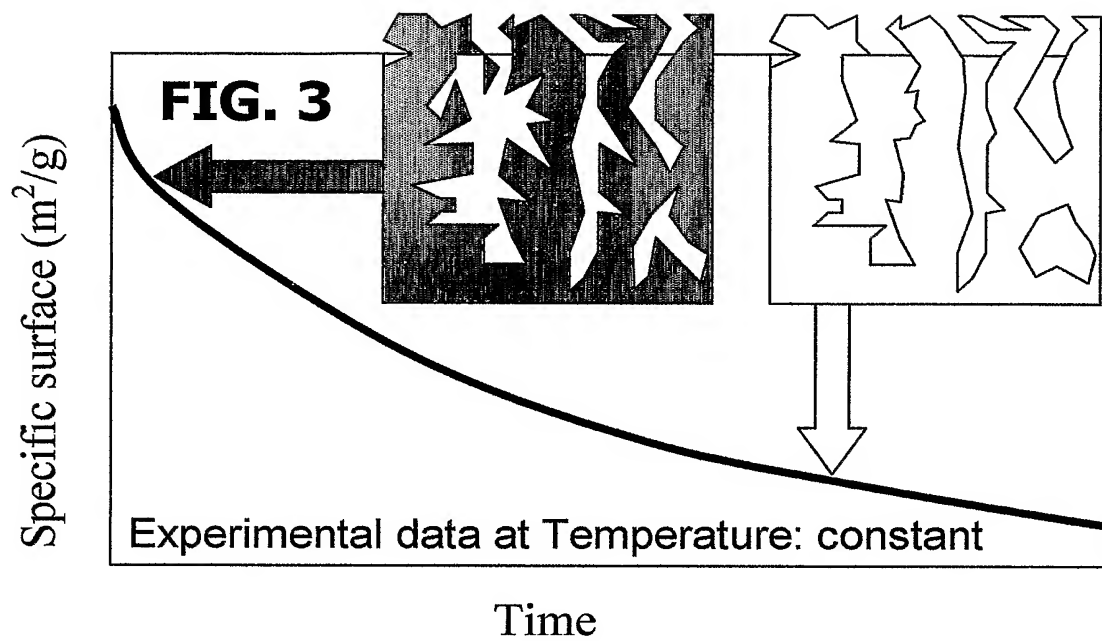


FIG. 2

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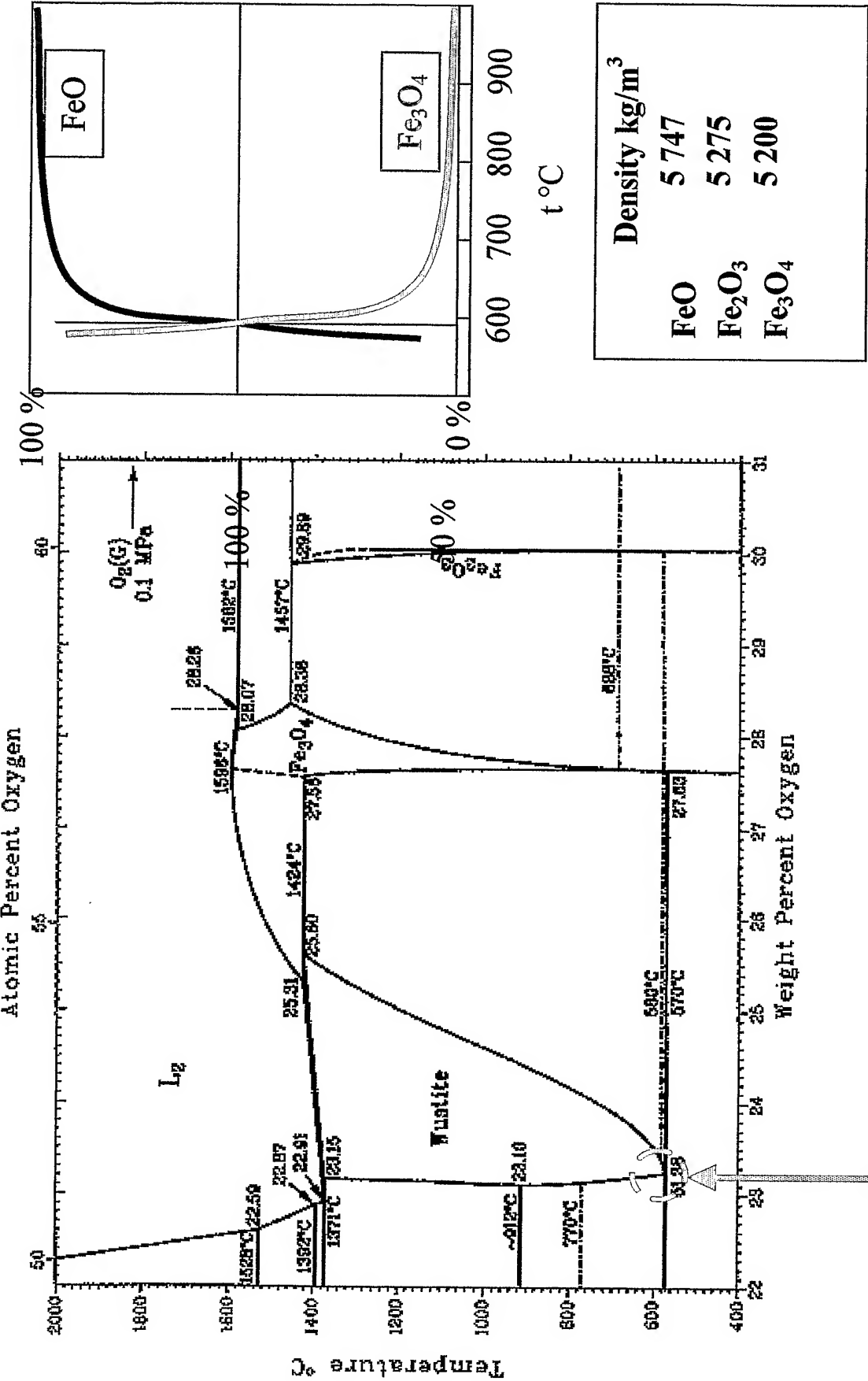
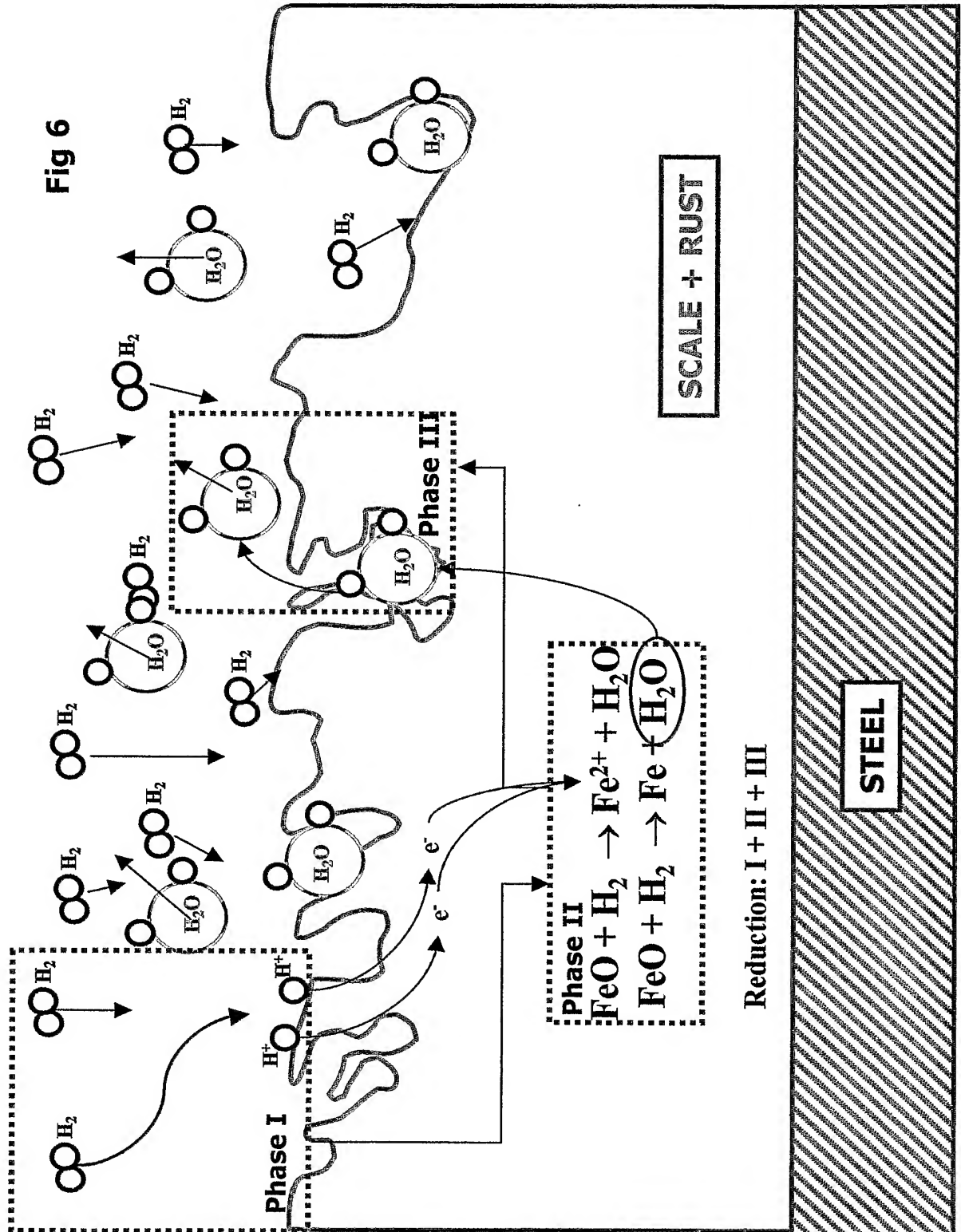


FIG. 5



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Fig 7

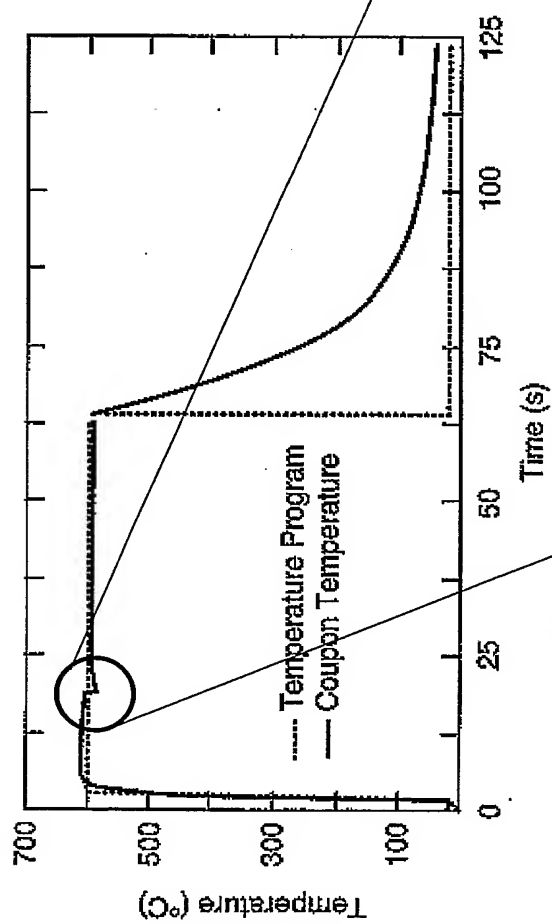
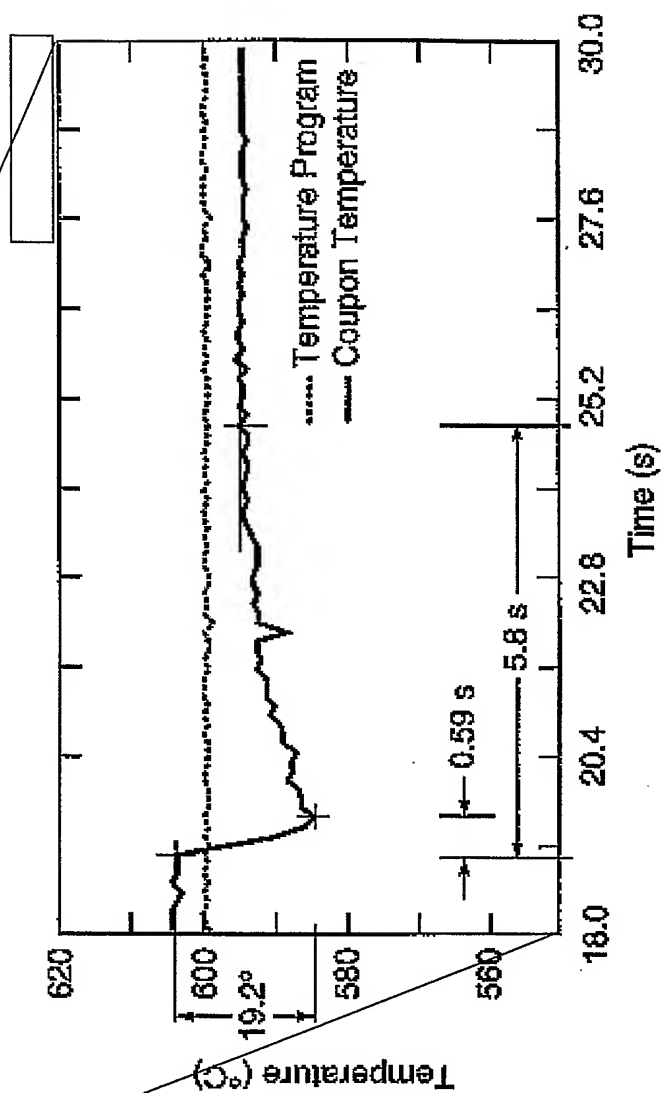


Fig 8



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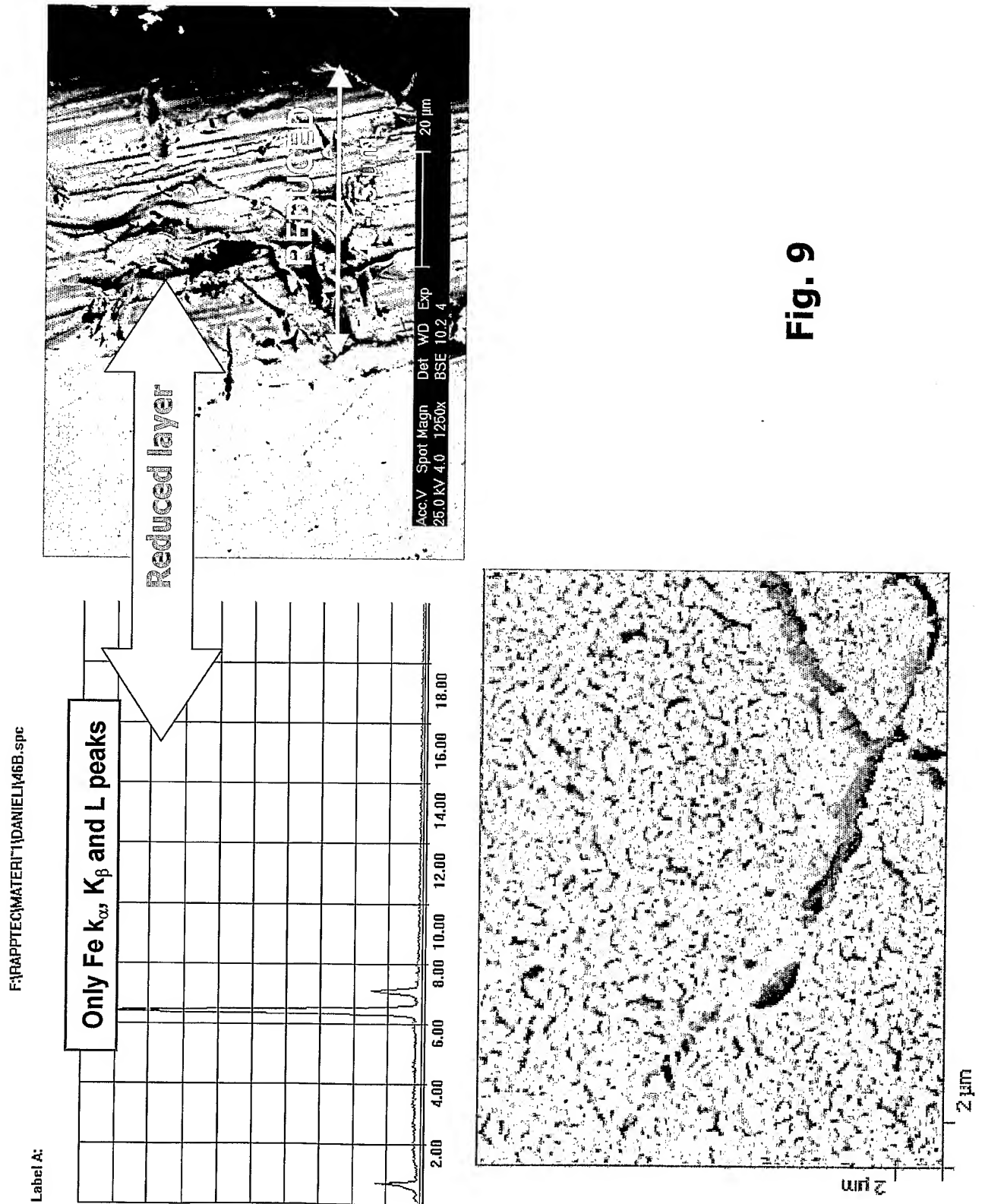


Fig. 9

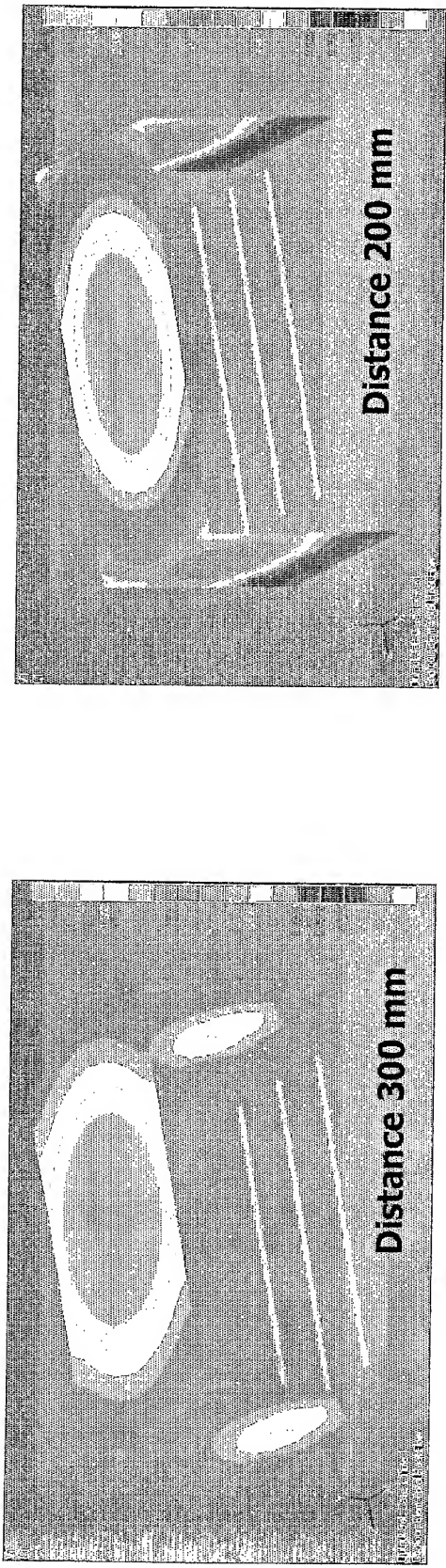
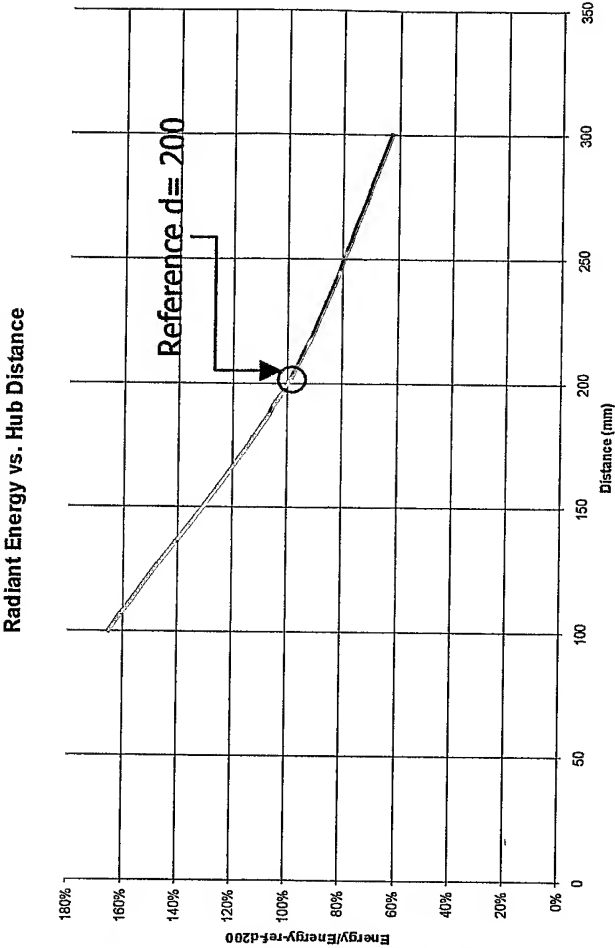
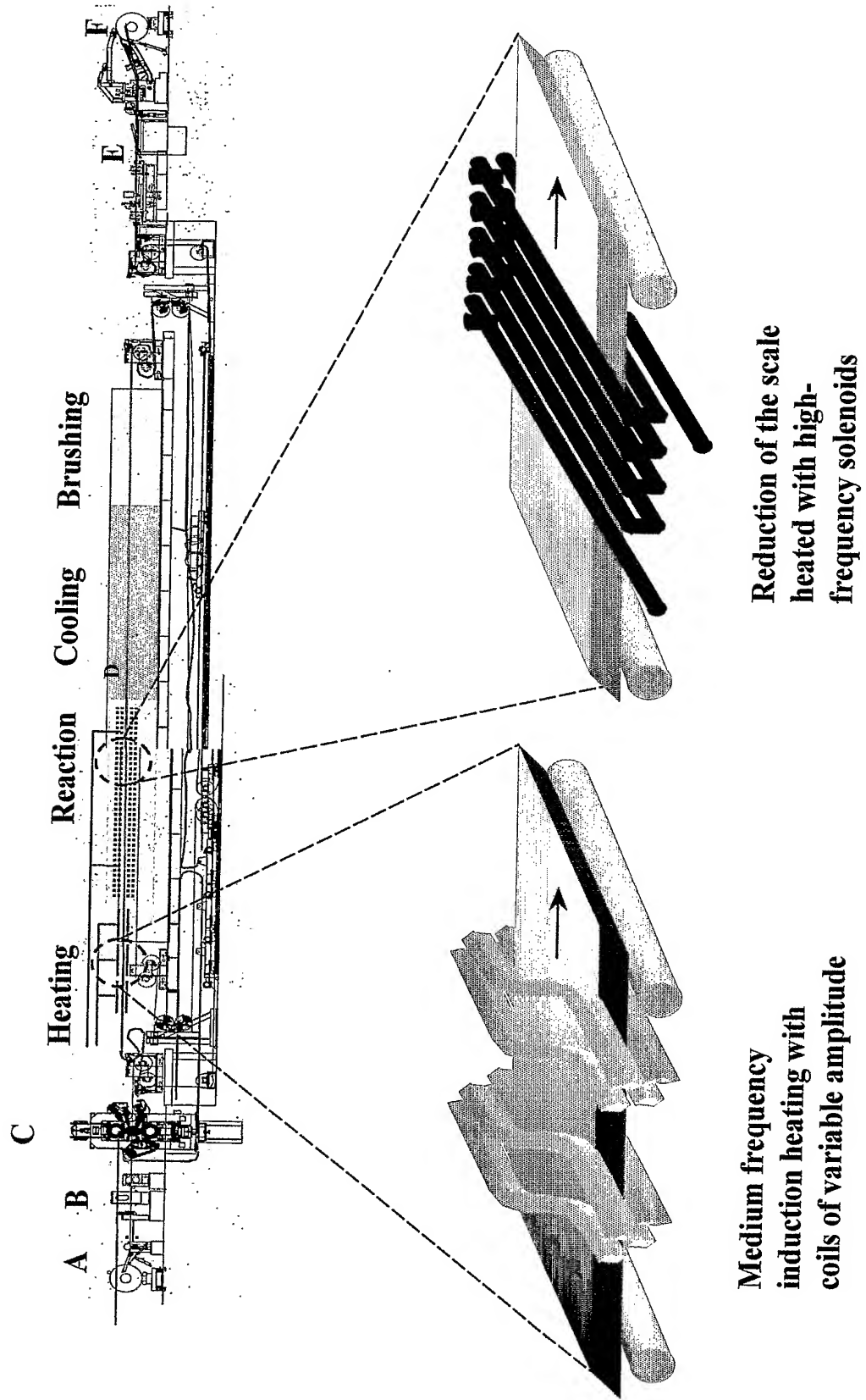


FIG. 10

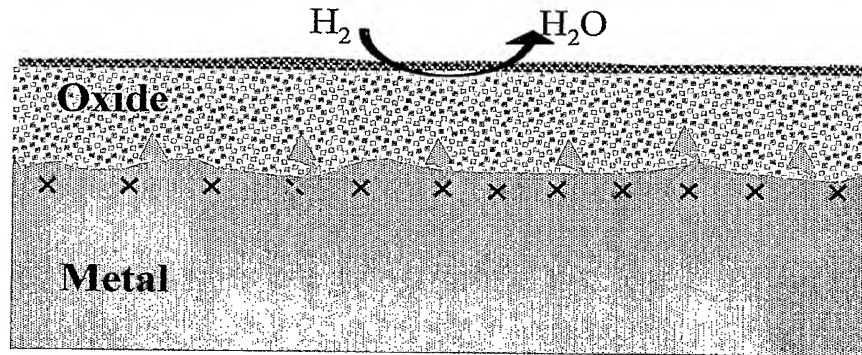


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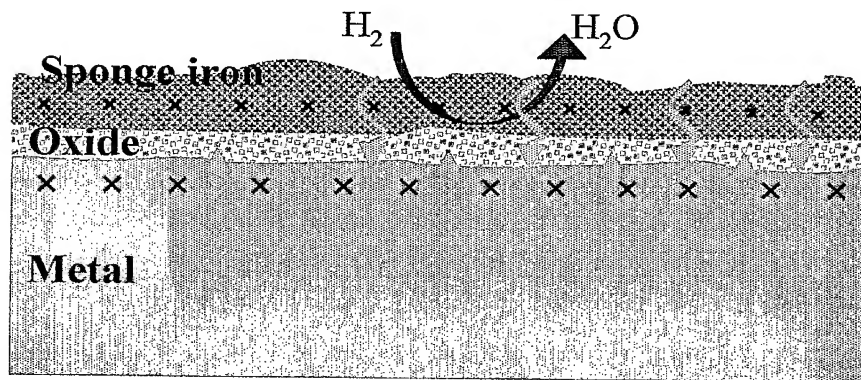
FIG. 11



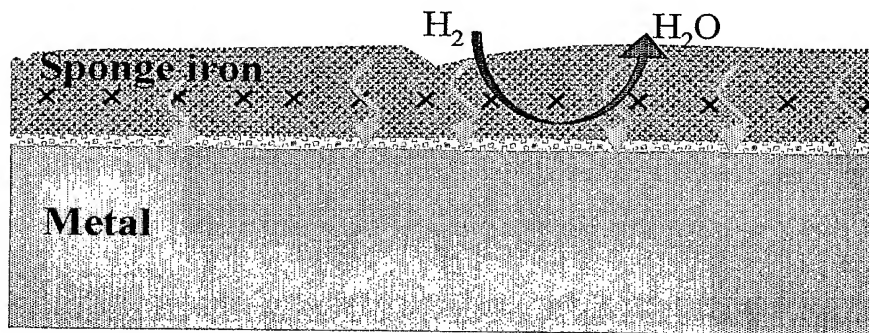
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Fig. 12

STEP I : reduction of the outer oxide layer with heating from the metal



STEP II: reduction of the oxide with heating from the metal and from the sponge iron



STEP III: final reduction of the oxide with heating from the sponge iron

 Thermal flow
 x x Current lines

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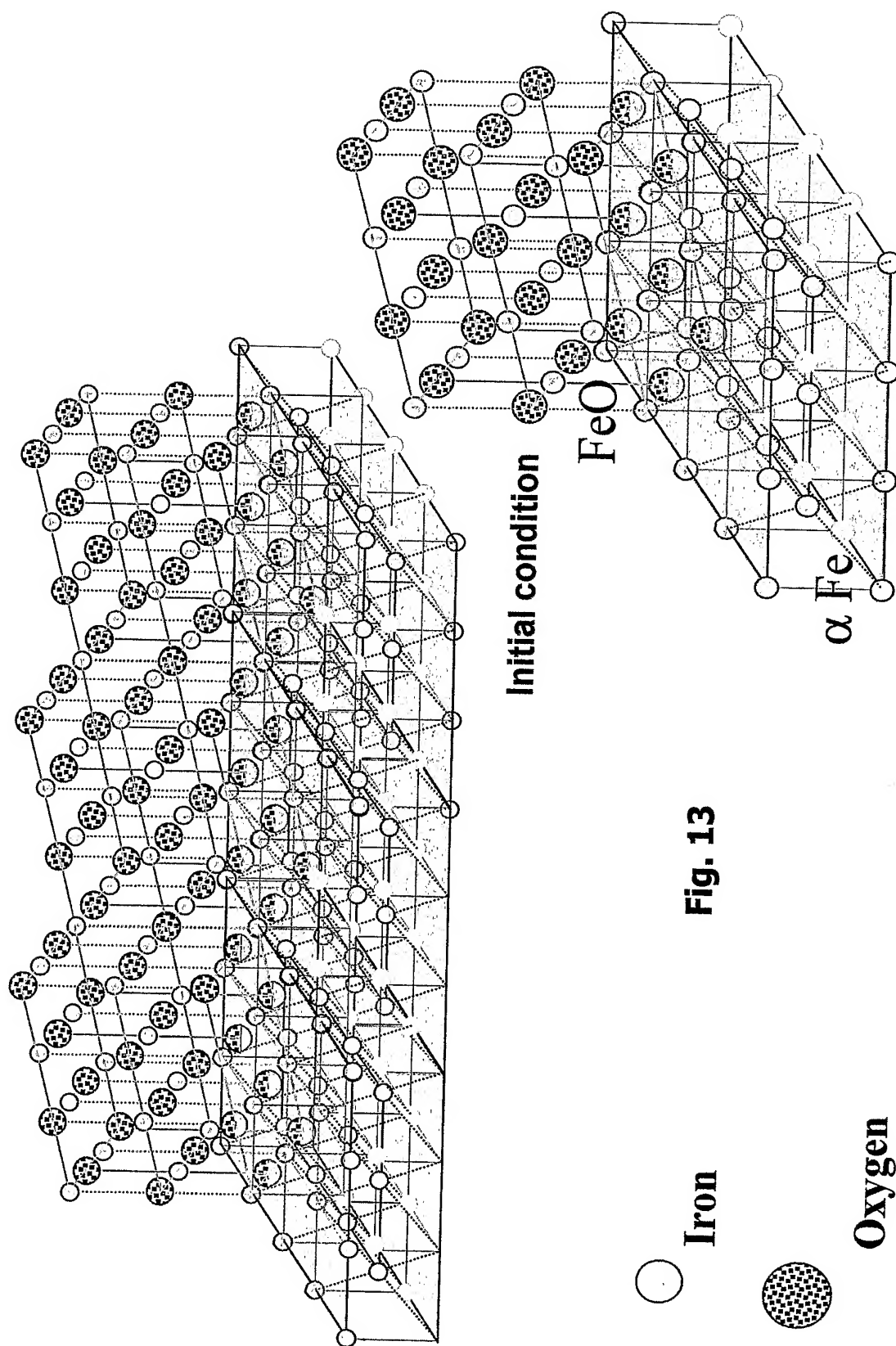


Fig. 13

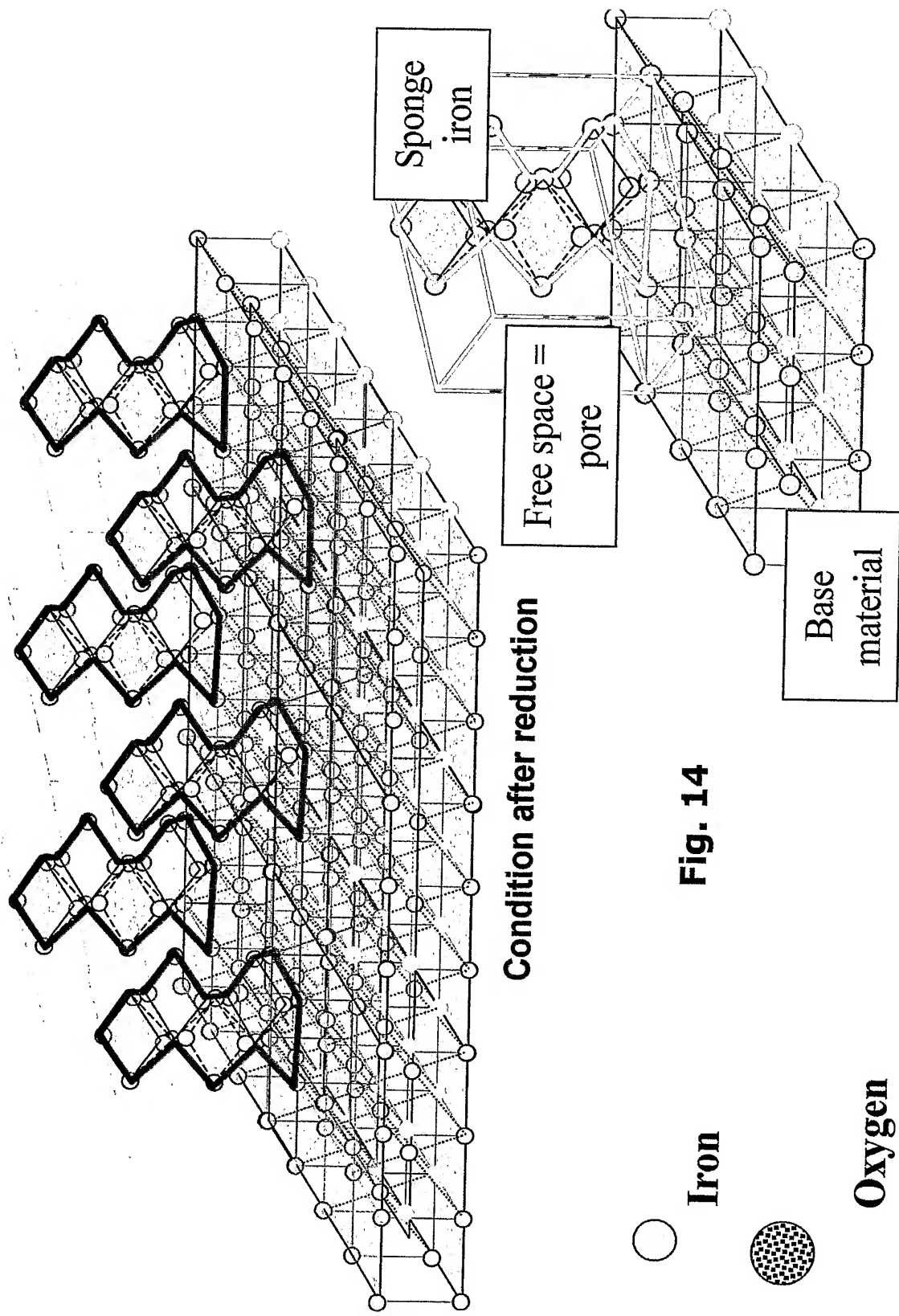


Fig. 14

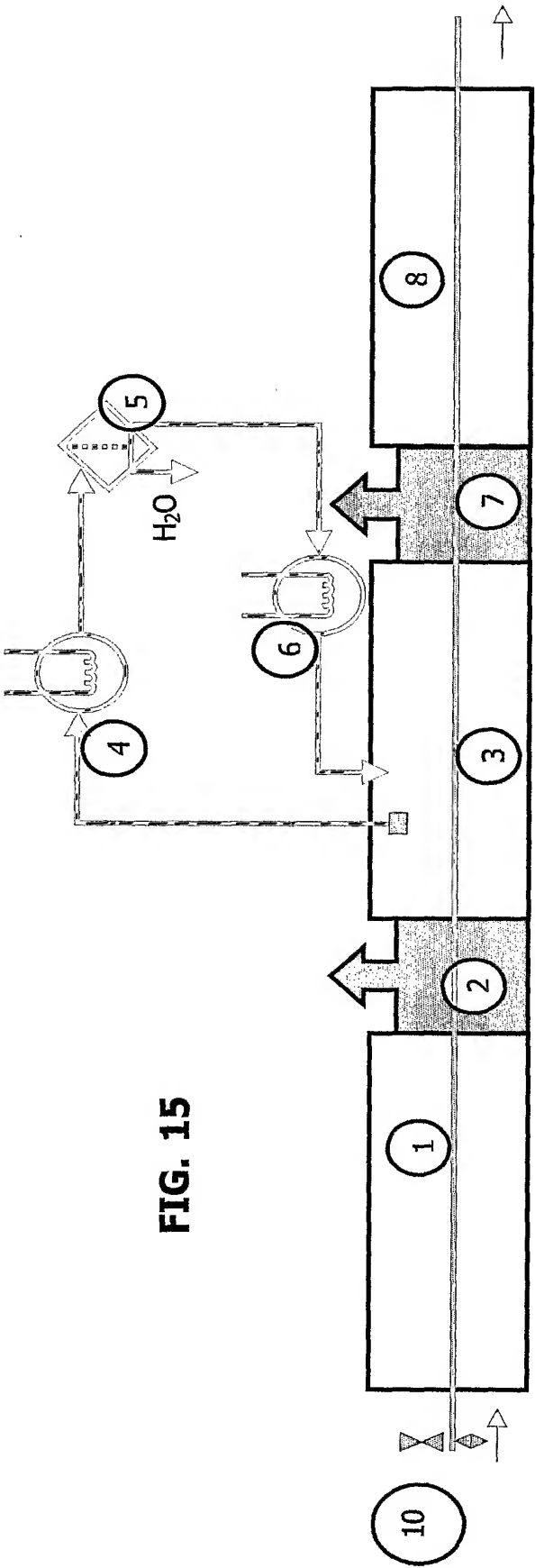


FIG. 15

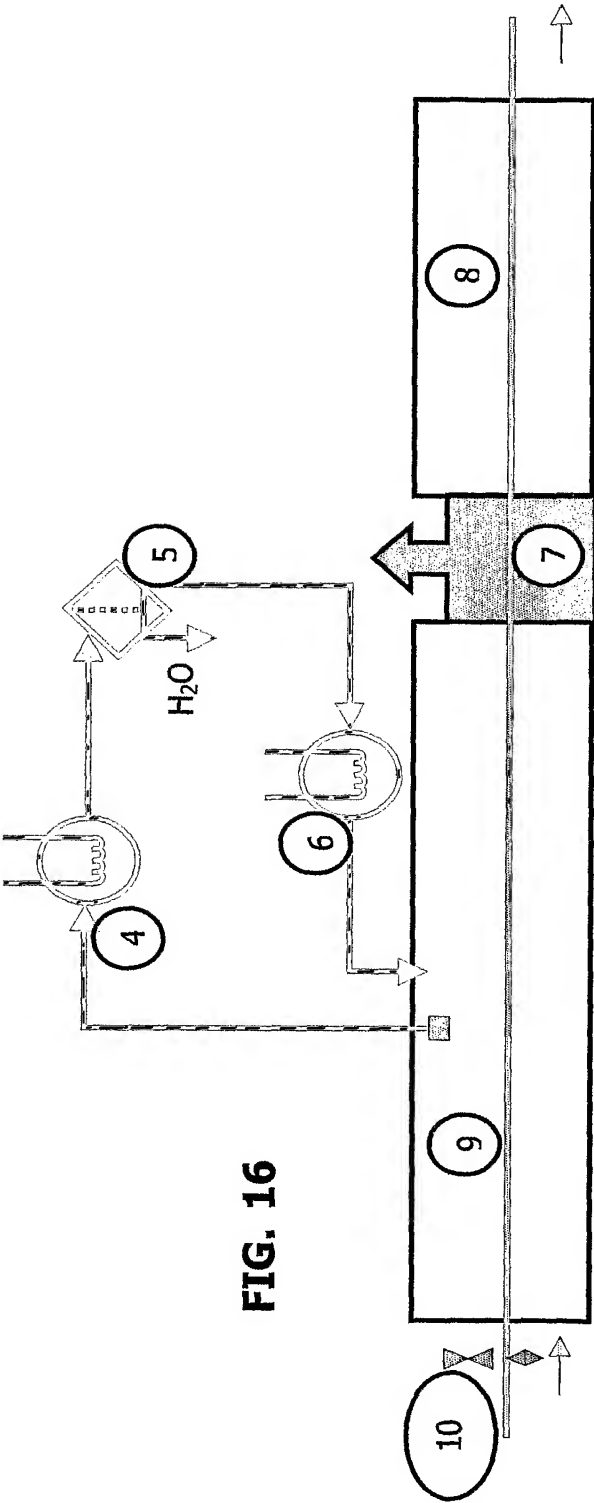


FIG. 16

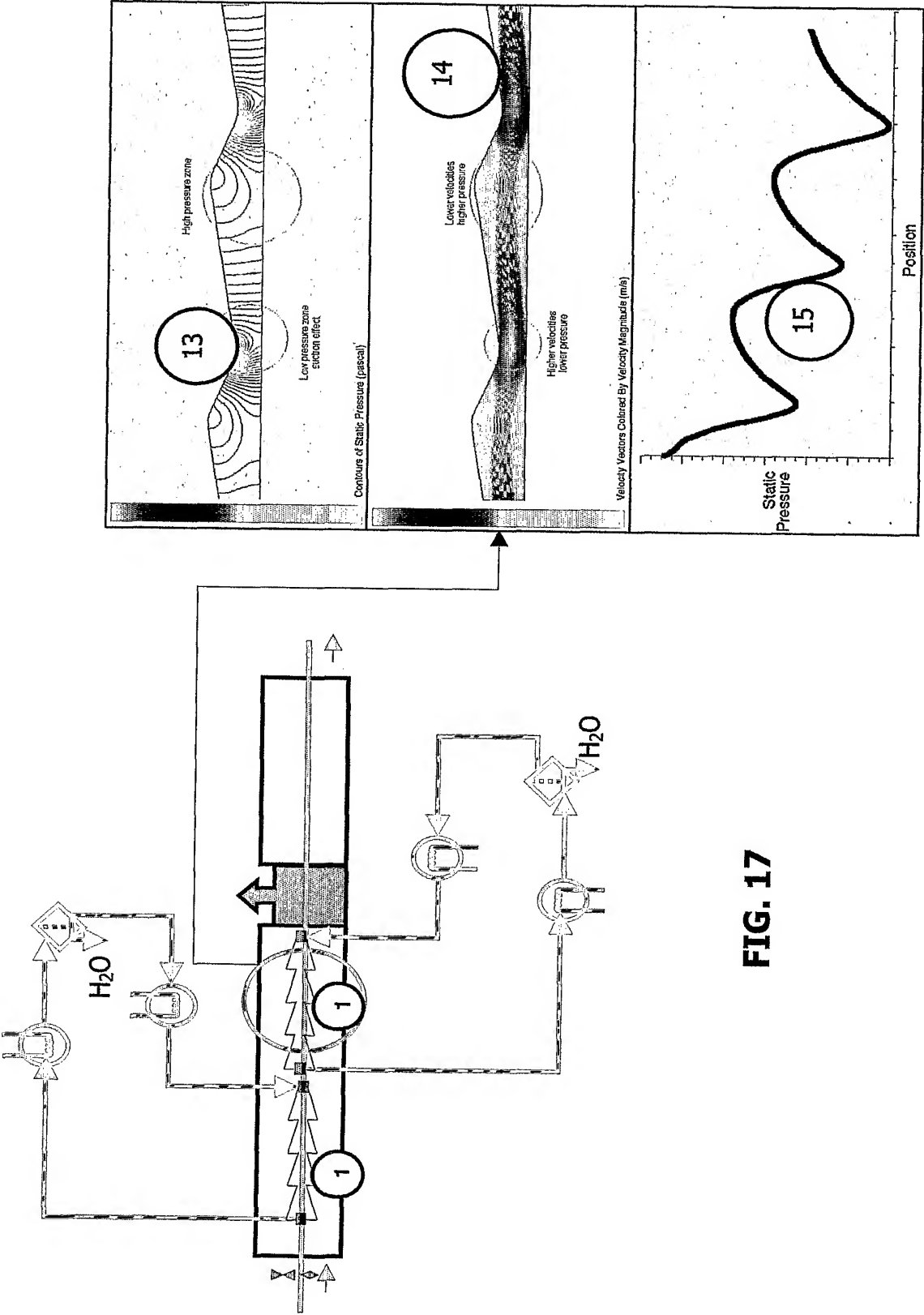
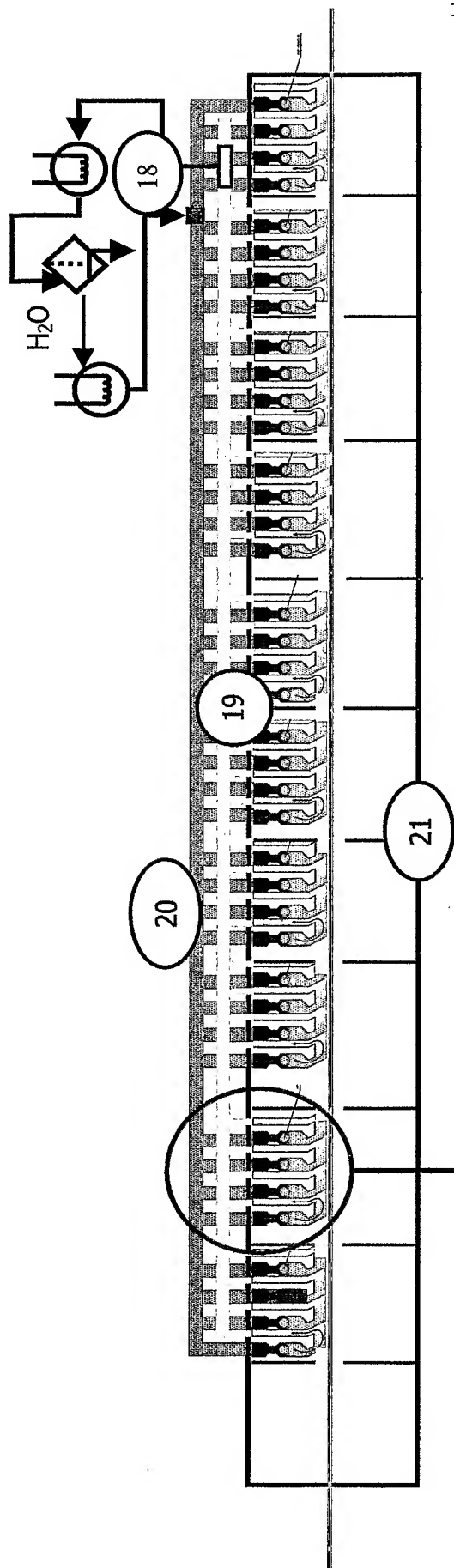


FIG. 17

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Convection as a main heat transfer mechanisms

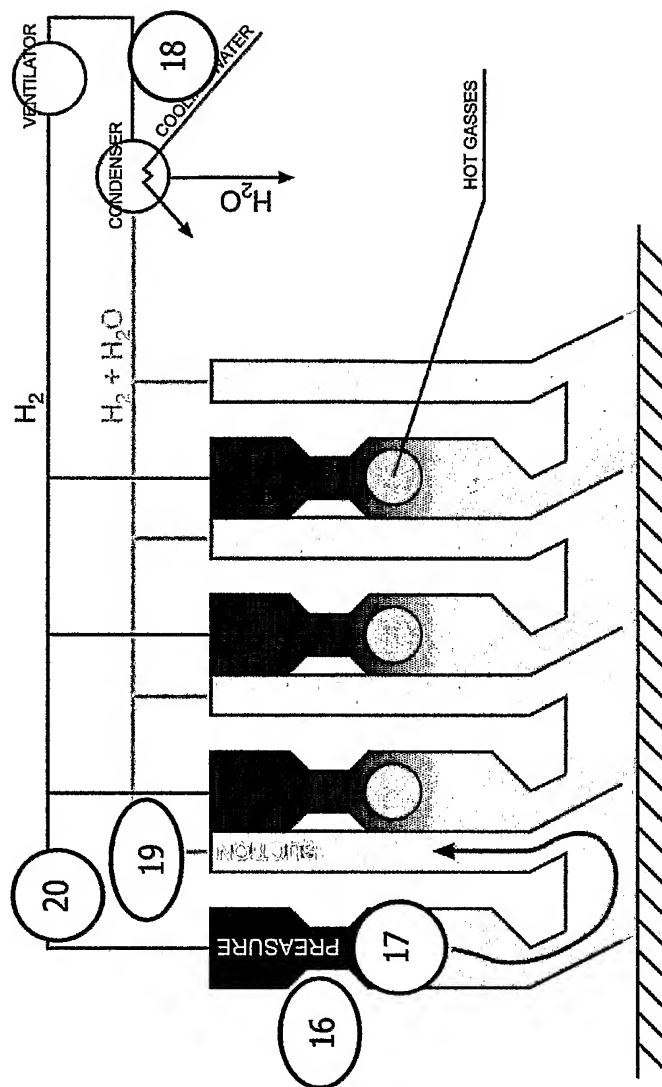


FIG. 18

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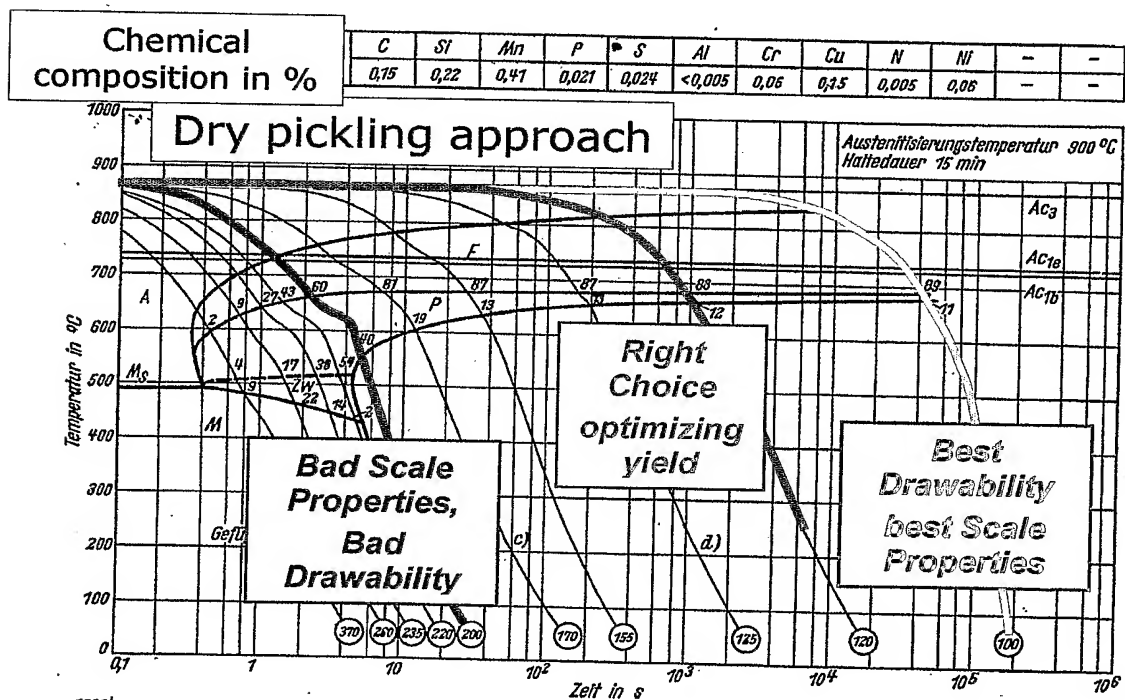
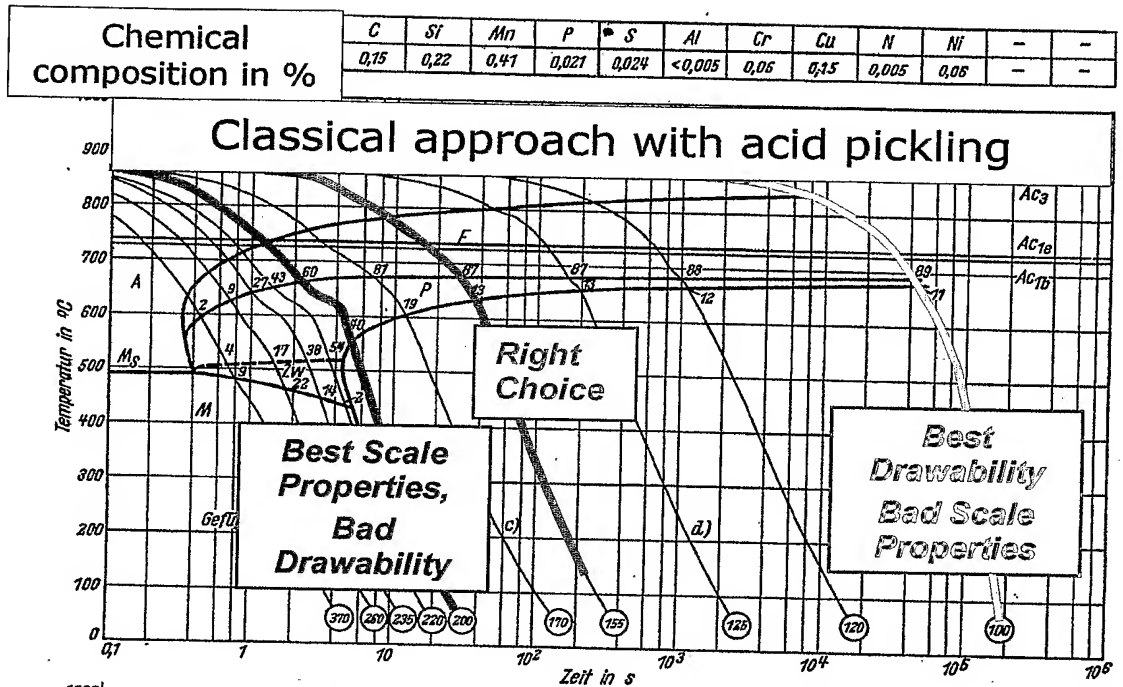
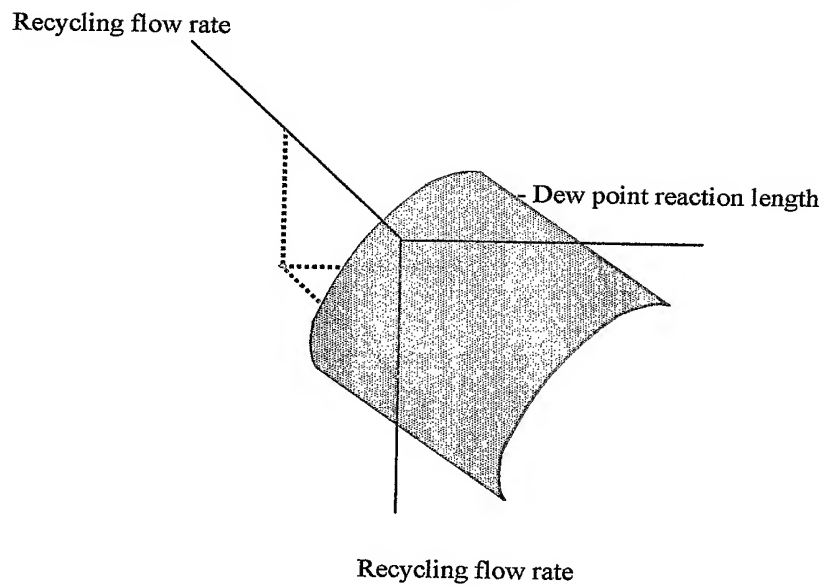


FIG. 19

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FIG. 20

Recycling flow rate with fixed dew point

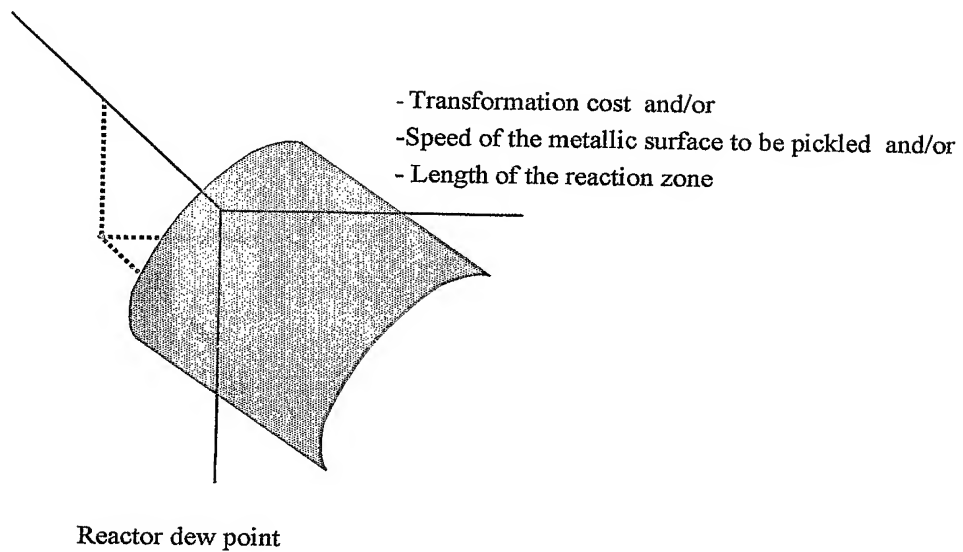
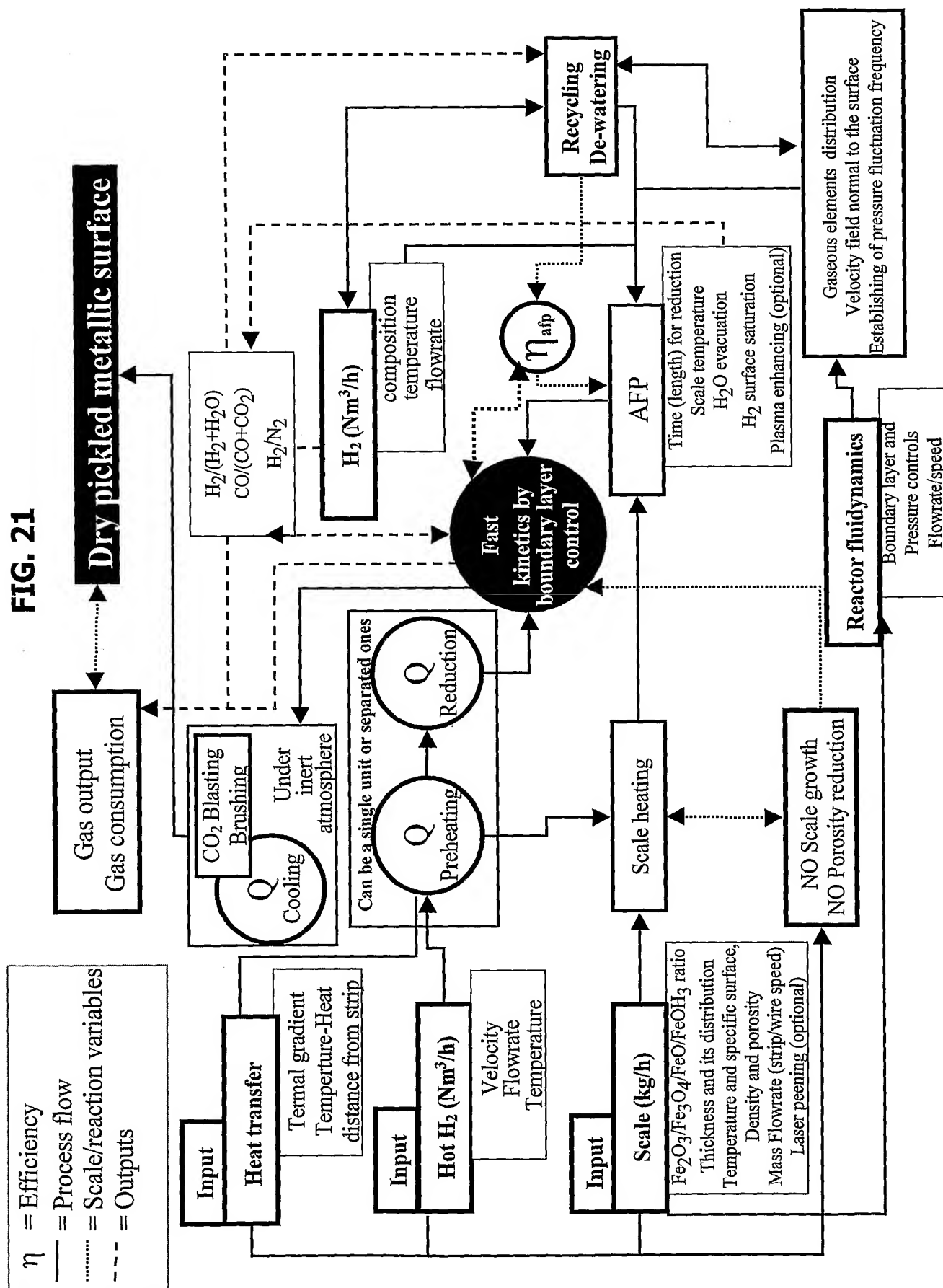


FIG. 21



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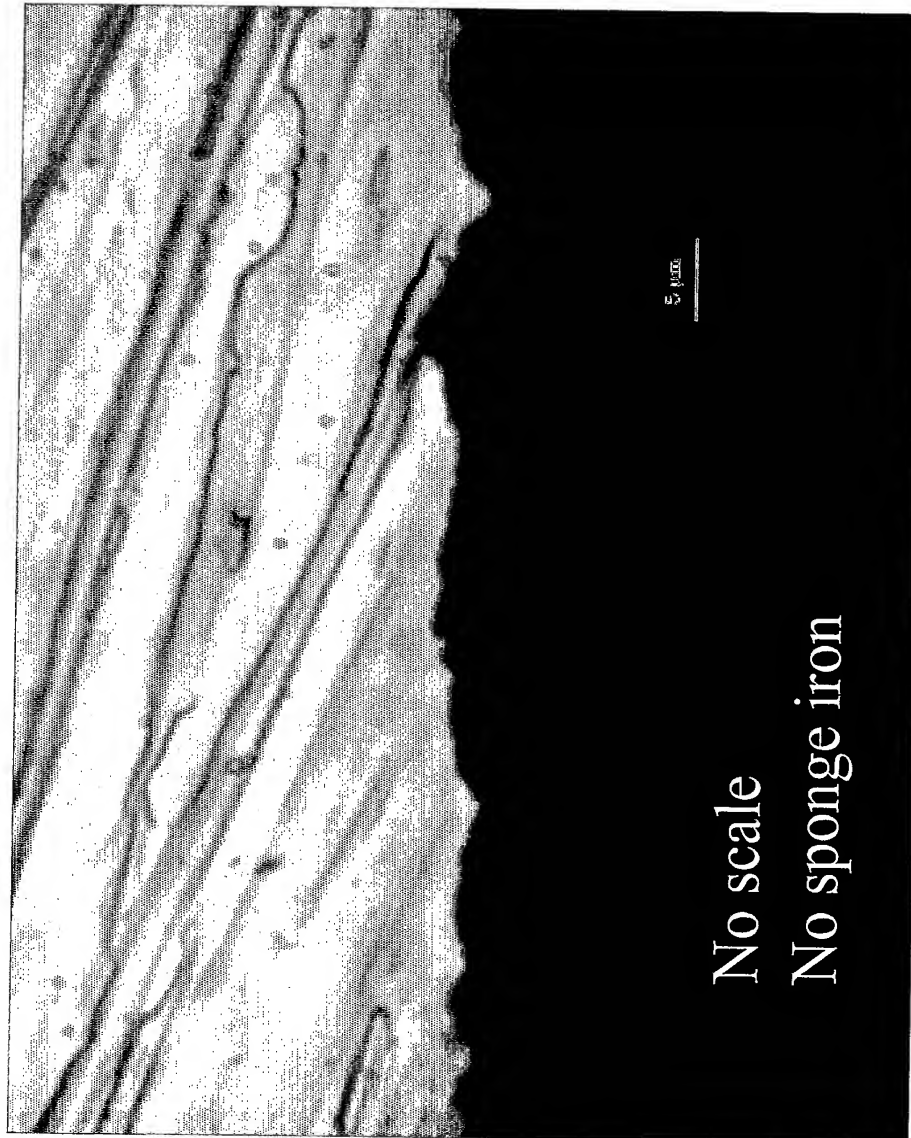


Fig. 22

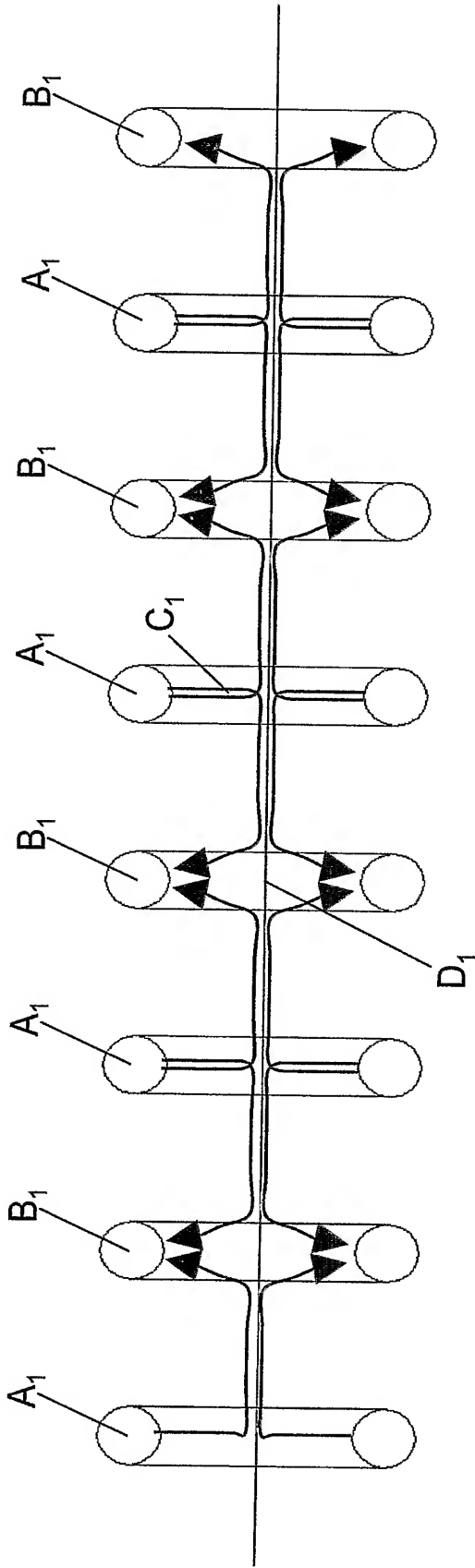


FIG. 23